

What is claimed is:

1. A method for transmitting data by a first communication device, the method comprising steps of:
 - receiving, from a second communication device, a message that comprises socket information and that requests an establishment of a connection based on the socket information, and wherein the socket information comprises destination information;
 - 5 translating the message requesting an establishment of a virtual connection to a connection request;
 - routing the connection request to the destination identified by the socket information, wherein a virtual connection is established based on the connection request;
 - 10 receiving, from the second communication device, a data packet that comprises a payload;
 - generating a header;
 - adding the header to the payload to produce a modified data packet; and
 - 15 routing the modified data packet to the identified destination.
2. The method of claim 1, wherein the socket information comprises a destination address and a destination port.
- 20 3. The method of claim 2, wherein the socket information further comprises a protocol designation.
4. The method of claim 2, wherein the socket information further comprises a source address and a source port.
- 25 5. The method of claim 1, wherein the received data packet does not include at least a portion of the socket information, and wherein the step of generating a header comprises a step of generating a header that comprises missing socket information.
- 30 6. The method of claim 5, wherein the step of adding a header that comprises missing socket information comprises a step of adding a header that corresponds to at least a portion of a TCP/IP (Transmission Control Protocol/Internet Protocol) suite.

7. The method of claim 5, wherein the header is based on the socket information included in the message.
- 5 8. The method of claim 5, wherein the header is based on packet data convergence protocol (PDCP) context.
9. The method of claim 5, wherein the header is based on configuration information.
- 10 10. The method of claim 1, wherein the step of establishing a virtual connection comprises steps of:
receiving an acknowledgement of the connection request routed to the identified destination;
receiving a connection request from the identified destination; and
15 acknowledging the connection request received from the identified destination.
11. The method of claim 1, wherein the method further comprises a step of tearing down the virtual connection.
- 20 12. The method of claim 11, wherein the step of tearing down the virtual connection comprises steps of:
routing a finish signal to the identified destination;
receiving an acknowledgement of the finish signal routed to the identified destination;
25 receiving a finish signal from the identified destination; and
acknowledging the finish signal received from the identified destination.
13. The method of claim 1, wherein the method further comprises steps of:
receiving a data packet intended for the second communication device, which data
30 packet comprises a payload intended for the second communication device and further comprises a header having socket information;

reducing a size of the header to produce a reduced-size data packet that comprises the payload; and

routing the reduced-size data packet to the second communication device.

5 14. The method of claim 13, wherein the step of reducing a size of the header comprises a step of terminating at least a portion of the socket information included in the data packet to produce a reduced-size data packet that comprises the payload.

10 15. The method of claim 14, wherein the reduced-size data packet is routed to the second communication device based on the socket information included in the message.

15 16. The method of claim 14, wherein the reduced-size data packet is routed to the second communication device based on packet data convergence protocol (PDCP) context.

15 17. The method of claim 14, wherein the reduced-size data packet is routed to the second communication device based on configuration information.

20 18. The method of claim 1, wherein the message requesting an establishment of a virtual connection comprises an interprocess communication (IPC) message, and wherein the step of translating the message requesting an establishment of a virtual connection to a connection request comprises a step of translating the IPC message to a TCP/IP (Transmission Control Protocol/Internet Protocol) synchronize (SYN) datagram.

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19. A method for transmitting data by a first communication device, the method comprising steps of:

5 producing a message requesting an establishment of a connection with a destination identified by socket information, wherein the socket information comprises destination information;

routing the message to a second communication device;

producing a reduced-size header data packet that comprises a payload and does not include at least a portion of the socket information;

10 routing the reduced-size header data packet to the second communication device; and

wherein the second communication device adds a header to the reduced-size data packet that includes missing socket information.

15 20. The method of claim 19, wherein the first communication device includes an application, wherein the reduced-size header data packet comprises a first reduced-size header data packet having a first payload, and wherein the method further comprises steps of:

20 receiving a second reduced-size data packet that comprises a second payload and does not include at least a portion of the socket information; and
routing the second payload to the application.

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21. A method for transmitting data comprising steps of:

generating, by a first communication device, a message requesting an establishment of a connection with a destination identified by socket information,
5 wherein the socket information comprises destination information;

routing, by the first communication device to a second communication device, the message;

receiving, by the second communication device, the message;

translating, by the second communication device, the message requesting an
10 establishment of a virtual connection to a connection request;

routing, by the second communication device, the connection request to the destination identified by the socket information, wherein a virtual connection is established based on the connection request;

generating, by the first communication device, a first reduced-size header data
15 packet that comprises a first payload and does not include at least a portion of the socket information;

routing, by the first communication device to the second communication device, the first reduced-size header data packet;

receiving, by the second communication device, the first reduced-size header data
20 packet;

generating, by the second communication device, a header that includes the missing socket information;

adding, by the second communication device, the header that includes the missing socket information to the payload to produce a modified data packet; and

25 routing, by the second communication device, the modified data packet to the identified destination.

22. The method of claim 21, wherein the method further comprises steps of:

30 receiving, by the second communication device, a data packet intended for the first communication device, which data packet comprises a second payload intended for the first communication device and further comprises a header having socket information and;

reducing, by the second communication device, a size of the header to produce a second reduced-size data packet that comprises the second payload; and

routing, by the second communication device, the second reduced-size data packet to the first communication device.

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23. The method of claim 22, wherein the step of reducing a size of the header comprises a step of terminating, by the second communication device, at least a portion of the socket information included in the data packet to produce a second reduced-size data packet that comprises the second payload.

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24. The method of claim 22, wherein the first communication device comprises a processor executing an application, and wherein the method further comprises steps of:

receiving, by the first communication device, the second reduced-size data packet that comprises the second payload and does not include at least a portion of the socket information; and

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routing the second payload to the application.

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25. A communication device capable of operating in a fixed infrastructure of a wireless communication system, the communication device having a processor capable of receiving a message from a different communication device, wherein the message comprises socket information and requests an establishment of a connection based on the
5 socket information, and wherein the socket information comprises destination information, translating the message requesting an establishment of a virtual connection to a connection request, routing the connection request to the destination identified by the socket information, wherein a virtual connection is established based on the connection request, receiving, from the different communication device, a data packet that comprises
10 a payload, generating a header, adding the header to the payload to produce a modified data packet, and routing the modified data packet to the identified destination.
26. The communication device of claim 25, wherein the communication device consists of one of a base station, a system controller, an access gateway, and a data router.
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27. The communication device of claim 25, wherein the socket information comprises a destination address and a destination port.
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28. The communication device of claim 25, wherein the socket information further comprises a protocol designation.
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29. The communication device of claim 25, wherein the socket information further comprises a source address and a source port.
30. The communication device of claim 25, wherein the received data packet does not include at least a portion of the socket information, and wherein the generation of a header comprises generating a header that comprises missing socket information.
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31. The communication device of claim 30, wherein the header is based on the socket information included in the message.

32. The communication device of claim 30, wherein the header is based on packet data convergence protocol (PDCP) context.

5 33. The communication device of claim 30, wherein the header is based on configuration information.

34. The communication device of claim 30, wherein the addition of a header comprises adding headers corresponding to a TCP/IP (Transmission Control Protocol/Internet Protocol) suite.

10 35. The communication device of claim 25, wherein the establishment of a virtual connection comprises receiving an acknowledgement of the connection request conveyed to the identified destination, receiving a connection request from the identified destination, and acknowledging the connection request received from the identified destination.

15 36. The communication device of claim 25, wherein the processor is further capable of tearing down the virtual connection.

20 37. The communication device of claim 36, wherein tearing down of the virtual connection comprises routing a finish signal to the identified destination, receiving an acknowledgement of the finish signal routed to the identified destination, receiving a finish signal from the identified destination, and acknowledging the finish signal received from the identified destination.

25 38. The communication device of claim 25, wherein the processor is further capable of receiving a data packet intended for the different communication device, which data packet includes socket information associated with a client application running on the different communication device and a payload intended for the client application, 30 reducing a size of the header to produce a reduced-size data packet that comprises the payload, and routing the reduced-size data packet to the different communication device.

39. The communication device of claim 38, wherein the reduction of a size of the header comprises terminating at least a portion of the socket information included in the received data packet to produce a reduced-size data packet that comprises the payload.

5 40. The communication device of claim 39, wherein the reduced-size data packet is routed to the different communication device based on the socket information included in the message.

10 41. The communication device of claim 39, wherein reduced-size data packet is routed to the different communication device based on packet data convergence protocol (PDCP) context.

15 42. The communication device of claim 39, wherein reduced-size data packet is routed to the different communication device based on configuration information.

20 43. The communication device of claim 25, wherein the message requesting an establishment of a virtual connection comprises an interprocess communication (IPC) message, and wherein the translation of the message requesting an establishment of a virtual connection to a connection request comprises translating the IPC message to a TCP/IP (Transmission Control Protocol/Internet Protocol) synchronize (SYN) datagram.

25 44. The communication device of claim 25, wherein an application layer that comprises a socket abstraction layer and a network stack that interfaces with the socket abstraction layer are implemented in the processor, and wherein a transport layer and a network layer of the network stack comprises a packet data convergence protocol (PDCP) layer.

45. The communication device of claim 44, wherein a link layer of the network stack comprises a radio link control (RLC) layer.

30 46. The communication device of claim 25, wherein an application layer that comprises a socket abstraction layer and a network stack that interfaces with the socket

abstraction layer are implemented in the processor, and wherein the network stack comprises a Radio Link Protocol (RLP) layer.

47. A communication device capable of operating in a fixed infrastructure of a communication system, the communication device having a processor capable of generating a message that comprises socket information and that requests an establishment of a connection with a destination identified by a socket information,
5 transmitting the message, and generating a data packet that comprises a payload and that further comprises a reduced-sized header that is missing at least a portion of the socket information.
48. The communication device of claim 47, wherein the socket information comprises
10 destination address and a destination port.
49. The communication device of claim 48, wherein the socket information further comprises a source address and a source port.
- 15 50. The communication device of claim 48, wherein the socket information further comprises a protocol designation.
51. The communication device of claim 47, wherein the processor is further capable of receiving a data packet that comprises a payload and that further comprises a reduced-sized header that is missing at least a portion of the socket information, and routing the payload included in the received data packet to a client application that is running on the processor.
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52. The communication device of claim 47, wherein an application layer that comprises a socket abstraction layer and a network stack that interfaces with the socket abstraction layer are implemented in the processor, and wherein a transport layer and a network layer of the network stack comprises a packet data convergence protocol (PDCP) layer.
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- 30 53. The communication device of claim 52, wherein a link layer of the network stack comprises a radio link control (RLC) layer.

54. The communication device of claim 47, wherein an application layer that comprises a socket abstraction layer and a network stack that interfaces with the socket abstraction layer are implemented in the processor, and wherein the network stack comprises a Radio Link Protocol (RLP) layer.

55. A communication system comprising:

a first communication device comprising a first socket abstraction layer capable of invoking function calls and sending interprocess communication (IPC) messages;

5 a second communication device comprising a second socket abstraction layer capable of generating headers that are not generated by the first socket abstraction layer; and

wherein the first socket abstraction layer is capable of communicating with the second socket abstraction layer via IPC messages and wherein the first communication device conveys data packets to the second communication device minus headers that are 10 appended to the data packet by the second communication device.

56. The communication system of claim 55, wherein the first communication device further comprises a first network stack that interfaces with the first socket abstraction layer, wherein the second communication device further comprises a second network stack 15 that interfaces with the second socket abstraction layer, and wherein each of the first network stack and the second network stack comprises a packet data convergence protocol (PDCP) layer.

57. The communication system of claim 56, wherein each of the first network stack 20 and the second network stack further comprises a radio link control (RLC) layer.

58. The communication system of claim 55, wherein the first communication device further comprises a first network stack that interfaces with the first socket abstraction layer, wherein the second communication device further comprises a second network stack 25 that interfaces with the second socket abstraction layer, and wherein each of the first network stack and the second network stack comprises a Radio Link Protocol (RLP) layer.

59. The communication system of claim 55, wherein the first communication device 30 employs a first set of protocols, wherein the second communication device employs a second set of protocols, wherein the communication system further comprises a third communication device comprising a relay, wherein the third communication device is

capable of receiving a first message from the first communication device, processing the first message based on the second set of protocols, and routing the processed first message to the second communication device, and wherein the third communication device is further capable of receiving a second message from the second communication device, processing the second message based on the first set of protocols, and routing the processed second message to the first communication device.

60. A communication system comprising:

a first communication device comprising a first socket abstraction layer, wherein the first communication device generates data packet that comprises a payload and a header and routes the data packet to the second communication device;

5 a second communication device comprising a second socket abstraction layer, wherein the second communication device receives the data packet, terminates at least a portion of the header that is generated by the first communication device to produce a reduced-size data packet, and routes the reduced-size data packet to a third communication device;

10 a third communication device comprising a third socket abstraction layer, wherein the third communication device receives the reduced-size data packet and generates at least a portion of the at least a portion of the header that is terminated by the second communication device; and

15 wherein the second socket abstraction layer is capable of communicating with the third socket abstraction layer via interprocess communication (IPC) messages.

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